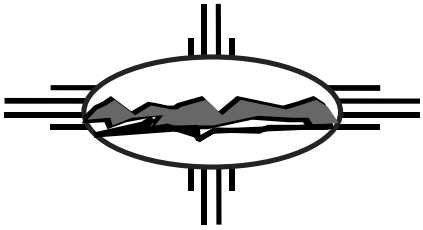
STANDARD OPERATING PROCEDURE

Title:	Identifier:	Revision:	Effective Date:
Sampling Commercial, Municipal, Domestic, and Monitoring Wells	**ER-SOP-6.04**	**1**	**03/08/99**



ER PROJECT

APPROVALS FOR USE

Author's Name (Print):	Author's Signature:	Date:
Jennifer Pope		**03/08/99**
Quality Program Project Leader's Name (Print)	Quality Program Project Leader's Signature	Date:
Larry Maassen		**03/08/99**

LOS ALAMOS NATIONAL LABORATORY

Sampling Commercial, Municipal, Domestic, and Monitoring Wells

Table of Contents

Sampling Commercial, Municipal, Domestic, and Monitoring Wells

NOTE: Environmental Restoration (ER) Project personnel may produce paper copies of this procedure printed from the controlled document electronic file. However, it is their responsibility to ensure that they are trained on and utilizing the current version of this procedure. The procedure author may be contacted if text is unclear.

1.0 PURPOSE

This Standard Operating Procedure (SOP) describes methods for sampling commercial, municipal, domestic, and monitoring wells.

2.0 TRAINING

This procedure is self-study. The **Field Team Leader** (FTL) and field team members should be familiar with the objectives of sampling commercial, municipal, domestic, and monitoring wells. In addition, all field team members must document that they have read and understand this procedure in accordance with QP-2.2.

3.0 DEFINITIONS

3.1 *Site-Specific Health and Safety Plan (SSHASP)*—A health and safety plan that is specific to a site or ER-related field activity that has been approved by an ER health and safety representative. This document contains information specific to the project including scope of work, relevant history, descriptions of hazards by activity associated with the project site(s), and techniques for exposure mitigation (e.g., personal protective equipment [PPE]) and hazard mitigation.

4.0 BACKGROUND AND PRECAUTIONS

Note: This SOP is to be used in conjunction with an approved SSHASP. Also, consult the SSHASP for information on and use of all PPE.

4.1 Water samples may be collected from industrial, public, and private water supply wells to support the site characterization of a facility (EPA, 1986). Specific sampling protocols must be considered on an individual basis. Factors to take into consideration when sampling a well are: depth of well, type of pump used, construction material, and access point for sample collection. The water samples collected are to be representative of the

aquifer within a given segment of the distribution system and potentially representative of the aquifer in which the well was installed. Consult the Sample Plan for specific instructions for each well.

4.2 Because non-inert materials in the well and distribution systems can alter the chemistry of the sample, it is important to collect the sample as close to the wellhead as possible (EPA Region 4, 1991).

4.3 Following properly documented field procedures will ensure that wells do not become damaged or contaminated through sampling activities. When sampling privately owned wells, representative water samples must be taken from a discharge pipe or water faucet located near the supply well. Under no circumstances will the field technician pull a pump or insert a sampling device directly into a privately owned well unless directed by or with documented approval from the field team leader and property owner.

4.4 All waste generated from well development must be handled in accordance with ER-SOP-1.06.

5.0 EQUIPMENT

A checklist of suggested equipment and supplies employed to implement this procedure is provided in Attachment A.

6.0 PROCEDURE

Note: Deviations from SOPs are made in accordance with QP-4.2.

6.1 Public and Private Water Supply Wells

For collection of groundwater from public and private water supply wells, proceed as outlined below:

6.1.1 Preliminary Sampling Activities

6.1.1.1 Assemble the equipment and supplies listed in Attachment A. Ensure the proper operation of all sampling equipment. If calibration is required, record calibration information on the Daily Activity Log form (Attachment E in ER-SOP-1.04), or a field notebook. Follow ER-SOP-6.02 for instructions on calibrating instruments.

6.1.1.2 Contact the Focus Area data technician to coordinate sampling efforts. The data technician will notify the Sample Management Office (SMO) regarding the number and type of samples to be shipped to the analytical labs.

6.1.1.3 Contact the well owner and set up a time to collect water samples and perform field chemistry measurements. If

possible, arrange for commercial, municipal, and domestic wells to be sampled before the monitor wells.

6.1.1.4 If possible, discuss your activity with the well owner and set up the sampling equipment in a location that will not inconvenience area residents. Also, discuss with the well owner how the purge/wastewater can be disposed of in accordance with ER-SOP-1.06.

6.1.1.5 If an existing well is to be sampled, determine if an ER location ID has been assigned to the well (data technicians should be able to do this).

6.1.1.6 Decontaminate all sampling equipment before taking the first sample and between sampling intervals in accordance with ER-SOP-1.08.

6.1.1.7 Select a discharge pipe or faucet closest to the well for sampling or directly from the well, if possible.

6.1.1.8 Determine if the discharge pipe or water faucet is on a water treatment system (water softener, for example). Note this in the comments section of the Water Quality Sampling Record (Attachment B in ER-SOP-6.01).

6.1.1.9 If possible, take a water level measurement as instructed in ER-SOP-7.02. For Laboratory supply wells, record the airline pressure or transducer readout.

6.1.1.10 Obtain well completion data if possible. Calculate the bore volume as described in ER-SOP-6.01.

6.1.2 Sampling Procedures

6.1.2.1 Detach aerators, strainers, or sink hose attachments prior to sampling.

6.1.2.2 Connect the appropriate sampling apparatus (tubing, connectors, and flow-through bath) to the discharge pipe. Remember that the sample should be collected as close as possible to the source and directly from the wellhead when feasible.

6.1.2.3 Set up the calibrated sampling equipment.

Note: For the steps in filtering water samples, refer to Section 6.6 of ER-SOP-6.05.

6.1.2.4 Begin withdrawing water from the well. If possible, run the water for at least 10 min. to ensure that pipes have been

thoroughly flushed. If this is not possible, purge the well as specified in ER-SOP-6.01.

6.1.2.5 Perform field measurements according to ER-SOP-6.02.

6.1.2.6 Collect water samples according to ER-SOP-1.02 and ER-SOP-6.03, if applicable.

6.1.3 Documentation

6.1.3.1 For each sample collected, initiate a custody record on the Chain-of-Custody/Request-for-Analysis Form (Attachment C in ER-SOP-1.04) and affix a Sample Label to each sample container.

6.1.3.2 Whenever a well is purged or sampled, record all field measurements and chemistry determinations on the Groundwater Elevation Level form as well as the Water Quality Sampling Record form. Copies of these forms and instructions for completing them are provided in ER-SOP-7.02 and ER-SOP-6.01, respectively.

6.1.4 Postoperation Activities

6.1.4.1 Make sure all survey or sampling locations are properly staked and the location ID is readily visible on the location stake.

6.1.4.2 Prepare the samples for delivery to the SMO according to ER-SOP-1.04, ER-SOP-1.02, and ER-SOP-1.03.

6.1.4.3 Decontaminate sampling equipment according to ER-SOP-1.08.

6.2 Monitoring Wells

For collection of groundwater samples from monitoring wells, proceed as outlined below:

6.2.1 Preliminary Activities

6.2.1.1 Assemble the equipment and supplies listed in Attachment A. Ensure the proper operation of all sampling equipment. If calibration is required, record calibration information on the Daily Activity Log form (Attachment E in ER-SOP-1.04) or in a field notebook. Follow ER-SOP-6.02 for instructions on calibrating instruments.

6.2.1.2 Contact the Focus Area data technician to coordinate sampling efforts. The data technician will notify the SMO

regarding the number and type of samples to be shipped to analytical labs.

6.2.1.3 Decontaminate all sampling equipment before taking the first sample and between sampling intervals in accordance with ER-SOP-1.08.

6.2.1.4 Take a water level measurement as instructed in ER-SOP-7.02.

6.2.1.5 Obtain well completion data. Calculate the bore volume as described in ER-SOP-6.01.

6.2.2 Sampling

6.2.2.1 Secure the work zone. Preclude passerby traffic through the work zone with barriers or cones. Place new plastic sheeting on the ground around the well in case something is dropped or must be placed on the ground.

6.2.2.2 Set up and calibrate the equipment. Calibration information must be recorded on the Daily Activity Log form or in a field notebook.

6.2.2.3 Connect the appropriate sampling apparatus (tubing or connectors) to the pump outlet. Remember that the sample should be collected as close as possible to the source, and directly from the wellhead when feasible.

6.2.2.4 Begin purging the well as specified in ER-SOP-6.01.

6.2.2.5 Perform field measurements according to ER-SOP-6.02.

6.2.2.6 Collect water samples according to ER-SOP-1.02 and ER-SOP-6.03 (if applicable). See Sample Plan for specifics on sampling procedures.

6.2.3 Documentation

6.2.3.1 For each sample collected, initiate a custody record on the Chain-of-Custody/Request-for-Analysis Form (Attachment C in ER-SOP-1.04) and affix a Sample Label to each sample container.

6.2.3.2 Whenever a well is purged or sampled, record all field measurements and chemistry determinations on the Groundwater Elevation Level form and Water Quality Sampling Record form. Copies of these forms and instructions for completing them are provided in ER-SOP-7.02 and ER-SOP-6.01.

6.2.4 Postoperation Activities

6.2.4.1 Prepare the samples to be delivered to the SMO according to ER-SOP-1.04, ER-SOP-1.02, and ER-SOP-1.03.

6.2.4.2 If decontamination of sample equipment is necessary, decontaminate according to ER-SOP-1.08.

7.0 REFERENCES

The following documents have been cited within this procedure.

QP-2.2, Personnel Orientation and Training

QP-4.2, Standard Operating Procedures Development

QP-4.3, Records Management

ER-SOP-1.02, Sample Containers and Preservation

ER-SOP-1.03, Handling, Packaging, and Shipping of Samples

ER-SOP-1.04, Sample Control and Field Documentation

ER-SOP-1.06, Management of Environmental Restoration Project Wastes

ER-SOP-1.08, Field Decontamination of Drilling and Sampling Equipment

ER-SOP-6.01, Purging of Wells for Representative Sampling of Groundwater

ER-SOP-6.02, Field Analytical Measurements on Groundwater Samples

ER-SOP-6.03, Sampling for Volatile Organics in Groundwater

ER-SOP-6.05, Soil Water Samples

ER-SOP-7.02, Fluid Level Measurement

EPA, “RCRA Ground Water Monitoring Technical Enforcement Guidance Document,” (OSWER, Washington, D.C., 1986).

EPA Region 4, “Environmental Compliance Branch Standard Operating Procedures and Quality Assurance Manual,” (Environmental Services Division, Athens, GA, 1991).

8.0 RECORDS

The **FTL** or designee is responsible for submitting the following records (processed in accordance with QP-4.3) to the Records Processing Facility.

8.1 Completed Daily Activity Log forms (Attachment E in ER-SOP-1.04) or field notebook that includes:

- groundwater level,

- deviations (if applicable),
- calibration information, and
- any other pertinent information.

8.2 Water Quality Sampling Record (Attachment B in ER-SOP-6.01)

8.3 Groundwater Elevation Form (Attachment B in ER-SOP-7.02)

8.4 Completed Chain-of-Custody/Request for Analysis Form (Attachment C in ER-SOP-1.04)

8.5 Sample Collection Log (Attachment B in ER-SOP-1.04)

9.0 ATTACHMENTS

The document user may employ documentation formats different from those attached to/named in this procedure—as long as the substituted formats in use provide, as a minimum, the information required in the official forms developed by the procedure.

Attachment A: Equipment and Supplies Checklist for Sampling Commercial, Municipal, Domestic, and Monitoring Wells (1 Page)

Equipment and Supplies Checklist for Sampling Commercial, Municipal, Domestic, and Monitoring Wells

_____ Teflon tubing

_____ Pump fittings

_____ Portable pump (if applicable)

_____ Water level probe

_____ Calibrated bucket

_____ Stopwatch

_____ Sample containers and preservatives

_____ Foam sleeves, vermiculite coolers, and Blue Ice (or equivalent)

_____ Plastic sheet

_____ Filters (if required)

_____ Daily Activity Log forms

_____ Chain-of-Custody/Request-for-Analysis Forms

_____ Sample Collection Log forms

_____ Variance Log

_____ Custody Seals

_____ Unique Sample Stickers

_____ Sample Labels

_____ Any PPE listed or required in the SSHASP

_____ Any additional supplies listed in associated procedures, as needed

_____

_____

_____

_____

_____

_____

ER-SOP-6.04	Los Alamos Environmental Restoration Project